Project Highlights Breakout Session - 2006 CEC

Construction AND Environmental Success

B-3045 Project History

- Project located on NC 89 Over the Dan River in northern Stokes County
- Bridge originally constructed in1946 Cast in place
- Project Design began in 1997
- Scheduled let date September 2000
- Project delayed because of Environmental concerns (Endangered Species James River Spiny Mussel found Oct 2000)
- Project let in August 2003

Project Challenges

- **Endangered Species**…..James River Spinymussel
- High Quality Water
- Onsite Stream Relocation
- Archaeological Site
- Drilled Shaft Foundation in Mid Channel
- Contaminated Soil (Fuel Tanks)
- Tire Dump on site
- Large Drainage Area (4101 sq mile-165 sq mile)
- Heavy Recreational use of the river
- Existing Bridge in Very Poor Condition

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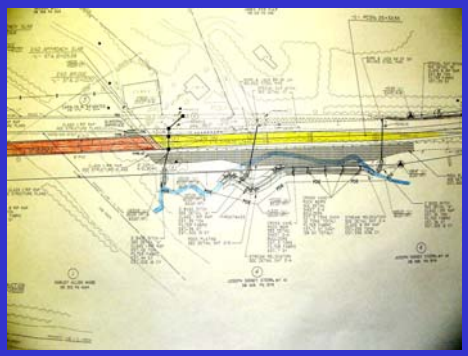
Preconstruction Conference

- Reviewed Project Permits and Project Commitments
- Explained Project Commitments are a minimum guide we should strive to exceed the minimum requirements
- We Have Several Moratoriums….provided a handout to make contractor aware of the dates and duration of the Moratoriums

Preconstruction Conference

- Contractor was reminded of their Erosion Control responsibility and if not met the ramifications were explained
- The contractor had an opportunity to meet representatives from the various resource agencies
- We reminded that the contractor the DOT had agreed to the special project commitments and that we would meet those commitments



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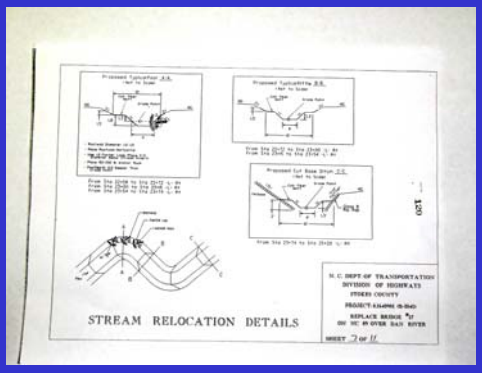
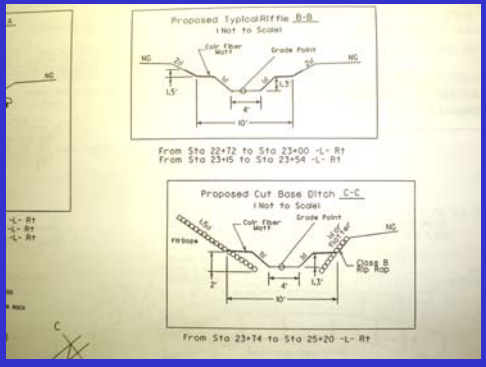
Existing Stream Conditions

- Incised/Entrenched
- Unstable Banks
- Channel is 6 to 8 Feet Deep





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Stream Relocation Area

What Do We Do Now???

- Call All The Agencies
- On-site Meeting to review the situation
- Formulated a Game Plan

Stream Crossing

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Coir Fiber Matting

Completed Stream

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Final Stream

Modification of Traffic Control

Due to the condition of the existing bridge we had to reduced the existing bridge to single lane of traffic

Existing Bridge

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Outside girder and overhang

Install signal heads

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Work Bridges

Our permit specifies work bridge with precast or A-frame footing

The permit also shows the phasing and orientation of the work bridges

Phase I

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Phase II

Bridge Demolition

- Permit required a containment system
- Bridge Demolition only to occur during August and September (during low flow)

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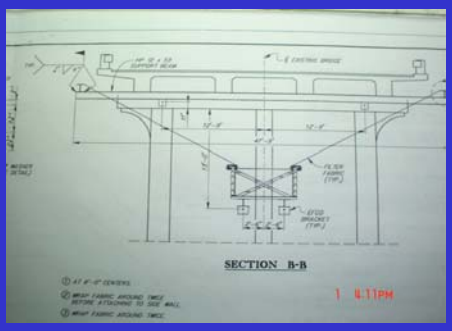

Containment System

Containment System Initial Design

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Revised Containment System

Bent and Footing Removal

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Cofferdam

Wire Saw

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Modification to a Containment Box

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Communication

Communication was the Key to **OUR** Success

Partnership

Contractor-DOT-Resource Agency

- Get to know the representatives from the resource agencies
- Get them involved ask their assistance
- Invite them to your Monthly Construction Meetings
- Disclosure of Problems and Concerns
- All the above Builds Trust

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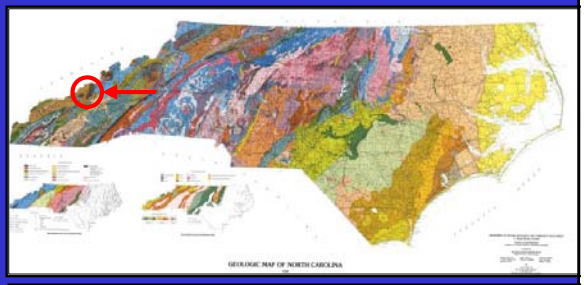
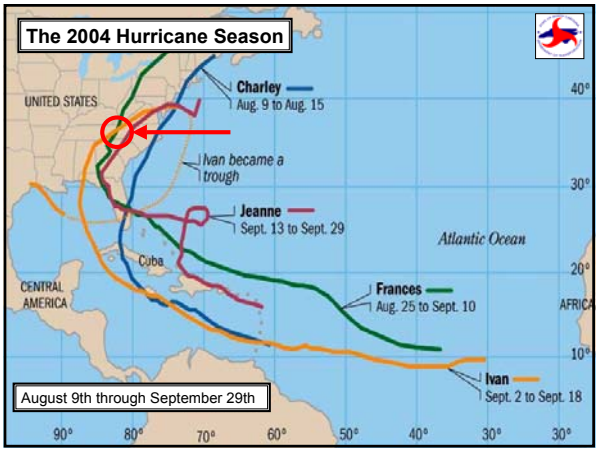
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION



Location of landslides near the NC-Tennessee border



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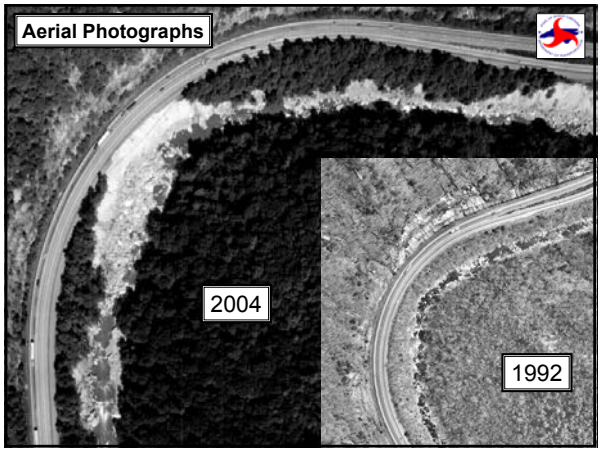

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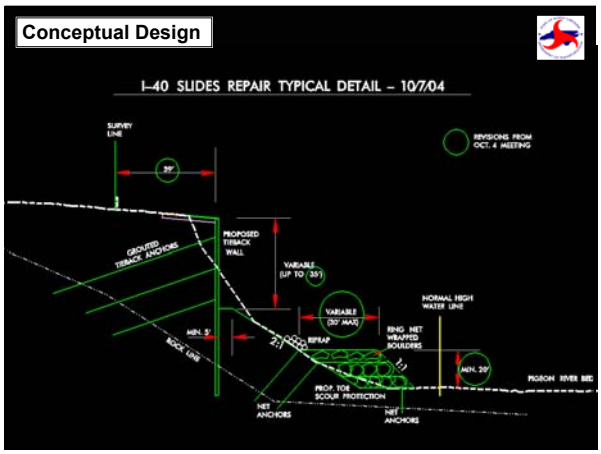
Interstate 40 Milepost 3 & 4
Emergency Slide Project Schedule

Date	Activity	Status
September 22, 2004	Location and Surveys Place Panels	Completed
September 22, 2004	Photogrammetry Files Project	Completed
September 23, 2004	Highway Design Branch Meets to Determine Scope of Work	Completed
September 24, 2004	Location and Surveys to Provide Base Line Surveys and Panel Controls to Photogrammetry	Completed
September 24, 2004	Geotechnical Engineering to Start Borings on I-40 Roadway Level	Completed
September 24, 2004	Division to Obtain Permit for Lower Borings in River	Completed
September 28, 2004	Photogrammetry to Provide Shell Mapping and Preliminary DTM to Roadway Design	Completed
September 29, 2004	Location and Surveys to Provide Obscured Areas for DTMs to Photogrammetry	Completed
October 1, 2004 (A.M.)	Roadway Design to Provide Preliminary Plans and Cross Sections to Geotechnical Engineering, Hydraulics, Structure Design and Division	Completed
October 1, 2004 (P.M.)	Photogrammetry to Provide Final Surveys and DTMs to Roadway Design	Completed
October 4, 2004	Roadway Design to Provide Final Plans and Cross Sections to Geotechnical Engineering, Hydraulics, Structure Design and Division	Completed
October 4-8, 2004	Roadway Design, Geotechnical Engineering, Structure Design, Hydraulics, and Division Coordinate on Final Design	Completed
October 13, 2004	All Plans are Turned in to Roadway Design	Completed
October 14, 2004	Roadway Design to Submit Plans to Division for Letting	Completed



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Contractor Selection Method

Utilized a TWO-step Contracting process

1) Select Geotechnical SubContractor
- Brayman Construction
- Hayward Baker
- Richard Goettle
- Schnabel Fdn. Co.

2) Select General Contractor
- Phillips & Jordan
- Taylor & Murphy
- Charles Blalock
- Wright Bros.

Geotechnical Contractor Selection

Presentations

- Brayman Construction
- Hayward Baker
- Richard Goettle
- Schnabel Fdn. Co.

Grading Criteria

- 60% Technical
- 40% Cost

	Points
Safety Plan	30
Schedules and Milestones	25
Long Term Maintenance	20
Innovation	10
Environmental Stewardship	10
Oral Interview	5

Geotechnical Contractor Bid Comparisons

RESULTS OF WALL SUBCONTRACTOR PRICE PROPOSAL OPENING

ENGINEER'S ESTIMATE = $2,275,000.00

QUALITY ADJUSTED PRICE RANKING (I-40 Emergency Project/Haywood Co.)

Vendor	Technical Score	Quality Credit (%)	Price Proposal ($)	Quality Value ($)	Adjusted Price ($)
BRAYMAN CONST.	97	54.00	$4,062,450.00	$2,193,723.00	$1,868,727
HAYWARD BAKER	70	0.00	$2,174,468.50	$0.00	$2,174,468.50
RICHARD GOETTLE,INC.	86	32.00	$4,695,000.00	$1,502,400.00	$3,192,600.00
SCHNABEL FOUNDATION COMPANY	77	14.00	$2,160,000.00	$302,400.00	$1,857,600

Schnabel Foundation Company

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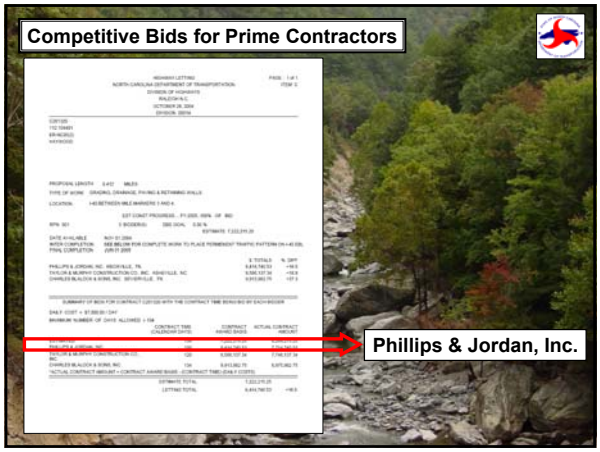

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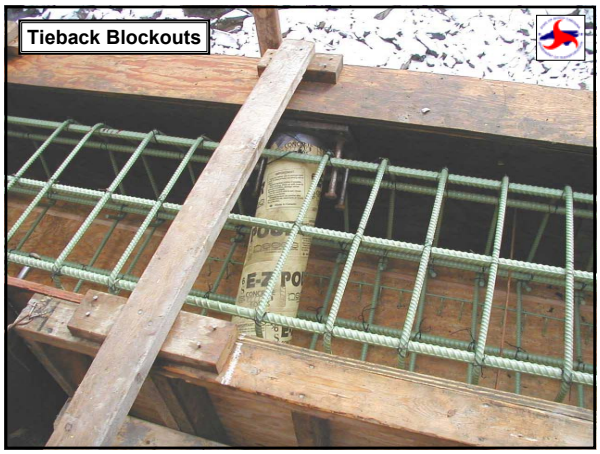

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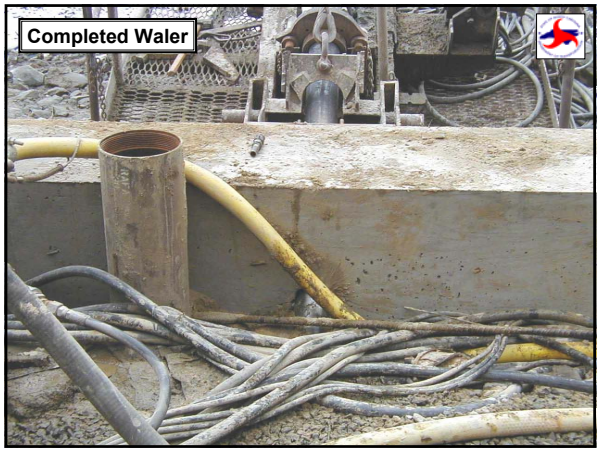

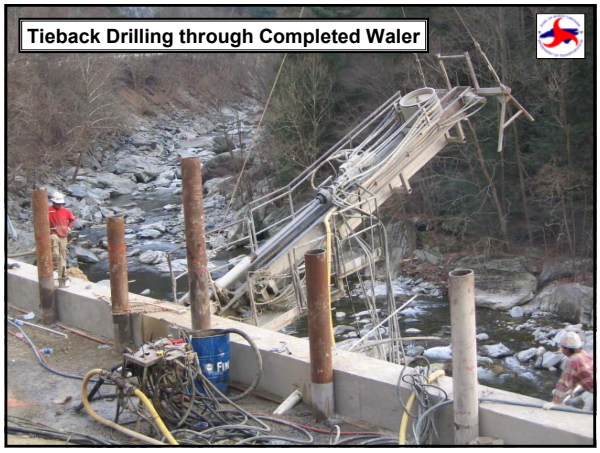

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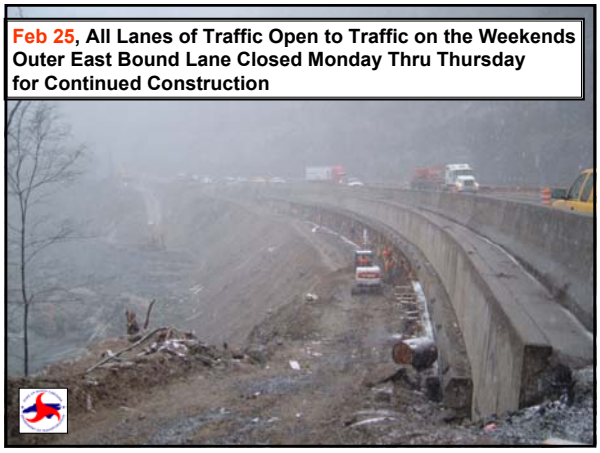

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

Summary

- I-40 closed to traffic - September 18
- Location set panels for aerial flight - September 22
- Plans complete - October 14
- Project available for construction - November 1
- All lanes of I-40 re-opened to traffic - February 25

Total Time to open all lanes of traffic - 160 days

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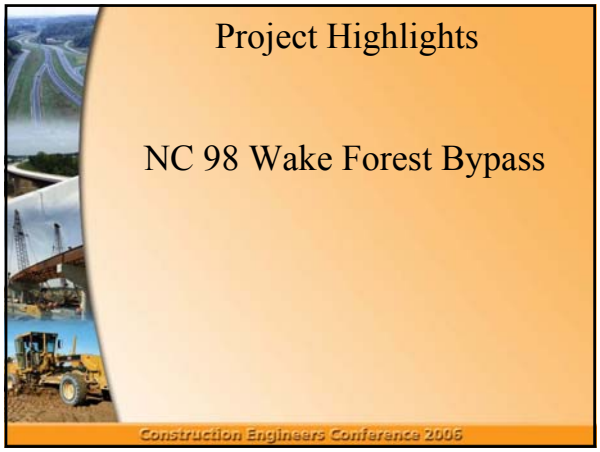

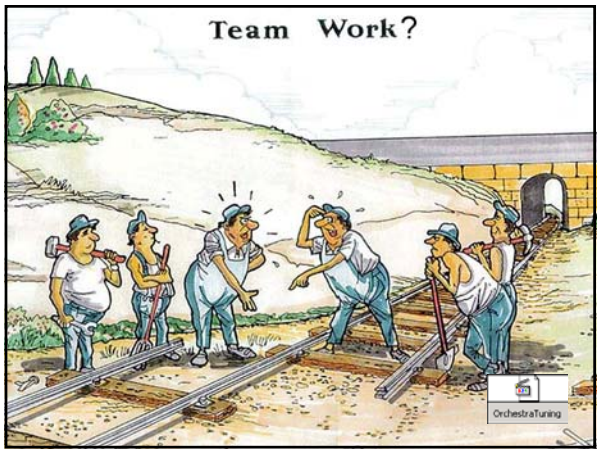

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Environmental Permitting Challenge

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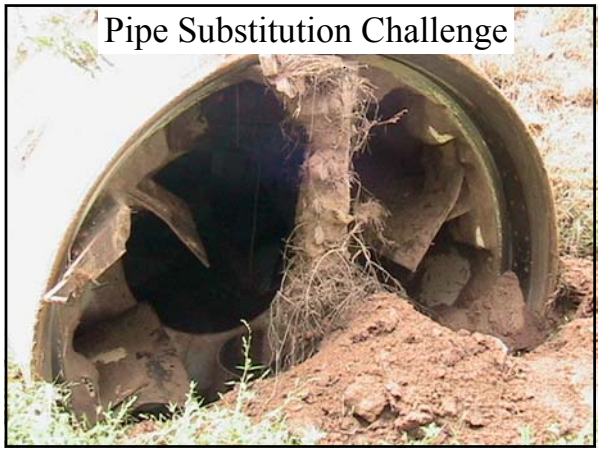

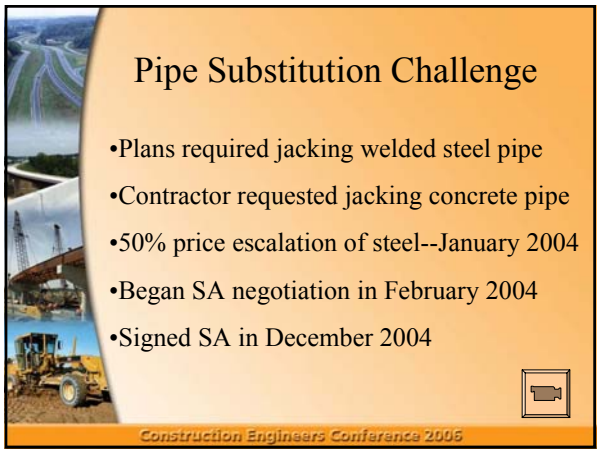

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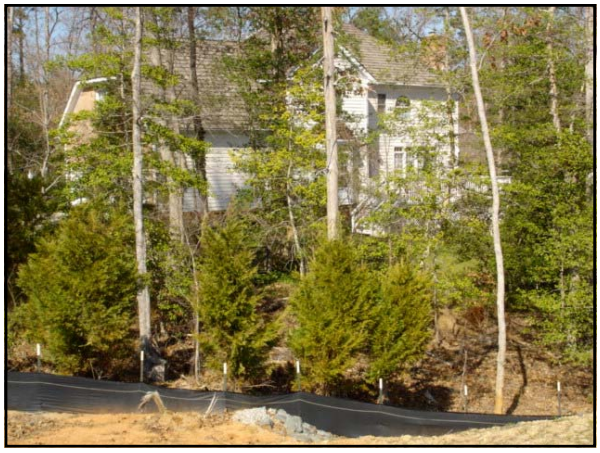
Conveyor Challenges
•24-hour schedule Monday-Friday
Duration - Six Weeks
Close proximity to homes
•Noise complaints from residents
Construction Engineers Conference 2006



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Waxhaw

- NC 16 - direct route from Charlotte to Waxhaw
- Multiple antique shops
- Major concern with Offsite Detour
- Constructability review held

Project Details

- 4 span cored slab bridge on drilled shafts
- Original plan - 1 year staged construction
- Final Contract - offsite detour - 90 day road closure
- Bonus for early opening $3600 per day up to maximum of $100,000
- Low Bidder - Dane Construction - $1.6 million

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Bridge Demolition

- Existing bridge- concrete deck and girder bridge with concrete abutments
- Critical for foundation work to proceed
- Worked 2 shifts - 24 hours during demo
- Completed in 3 days

Foundations

- Worked 2 crews - 12 hours a day
- Completed 9 shafts in 7 days

Substructure

- Contractor elected to use Class AA concrete to allow early form removal and erection of slabs
- Completed in 15 days
- Also working on roadway and drainage improvements concurrently

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Superstructure

- Four spans of cored slabs set, tensioned, and grouted in 5 Days
- Used precast barrier rail - set in 2 Days

Project complete

- Dane Construction worked 12 men (2 crews) - Averaged 60 hours per week per man
- Project Overran 12% due to grade revisions

Completed Project Details

- Work began January 18
- Road Opened March 11
- 53 day road closure - 7 days earlier than required to receive maximum bonus

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Celebration

NC 16 Division 10